

What is claimed is:

1           1. A method of performing a database query, the method comprising:  
2                 generating an access plan for the database query, the access plan using at  
3                 least one resource capable of being retrieved into working memory, wherein the  
4                 resource is selected from the group consisting of a database file, a database table,  
5                 an index, a temporary result set, a temporary file, and a hash table;  
6                 estimating a percentage of the resource that is currently resident in  
7                 working memory;  
8                 estimating a cost for the access plan using the estimated percentage; and  
9                 selectively executing the access plan based upon the estimated cost.

1           2. The method of claim 1, further comprising generating a second access plan for  
2           the database query and estimating a cost for the second access plan, wherein selectively  
3           executing the first access plan includes comparing the estimated costs for the first and  
4           second access plan and executing the first access plan if the estimated cost therefor is less  
5           than that of the second access plan.

1           3. A method of optimizing a database query, the method comprising:  
2                 determining a retrieval status for a resource used by the database query;  
3                 and  
4                 generating an access plan for the database query using the determined  
5                 retrieval status for the resource.

1           4. The method of claim 3, wherein the resource is selected from the group  
2           consisting of a database file, a database table, an index, a temporary result set, a  
3           temporary file, a hash table, and combinations thereof.

1           5. The method of claim 3, wherein determining the retrieval status includes  
2           determining whether at least a portion of the resource is resident in working memory.

1           6. The method of claim 3, wherein determining the retrieval status includes  
2           determining whether at least a portion of the resource is resident in a cache memory.

1           7. The method of claim 3, wherein determining the retrieval status includes  
2           determining whether at least a portion of the resource is resident in a local or a remote  
3           memory.

1           8. The method of claim 3, wherein determining the retrieval status includes  
2           determining a percentage of the resource that is resident in working memory.

1           9. The method of claim 3, wherein determining the retrieval status includes  
2           accessing a resource manager to obtain the retrieval status of the resource.

1           10. The method of claim 9, further comprising tracking, with the resource  
2           manager, a percentage of the resource that is in working memory.

1           11. The method of claim 10, further comprising storing the percentage of the  
2 resource that is in working memory in a header for a persistent copy of the resource.

1           12. The method of claim 3, wherein generating the access plan includes:  
2                 generating a plurality of alternate access plans;  
3                 calculating a cost for each alternate access plan using the determined  
4 retrieval status for the resource; and  
5                 selecting one of the alternate access plans based upon the calculated costs  
6 for each alternate access plan.

1           13. The method of claim 12, wherein the retrieval status for the resource indicates  
2 a percentage of the resource that is resident in working memory, and wherein calculating  
3 the cost for each alternate access plan includes:

4                 calculating the cost as a function of input/output cost and processing cost;  
5 and  
6                 calculating the input/output cost by scaling an estimated input/output cost  
7 by a scalar value associated with the percentage of the resource that is resident in  
8 working memory.

1           14. The method of claim 12, further comprising:  
2                 storing the access plan, including associating with the stored access plan a  
3 retrieval status assumption for the stored access plan, the retrieval status  
4 assumption representing the determined retrieval status used to generate the  
5 access plan; and  
6                 in response to a request to execute the stored access plan:  
7                         determining a current retrieval status for the resource;  
8                         comparing the current retrieval status with the retrieval status  
9 assumption; and

10                               selectively generating another access plan for the database query  
11                               using the current retrieval status based upon the comparison of the current  
12                               retrieval status with the retrieval status assumption.

1                               15. The method of claim 3, wherein determining the retrieval status includes  
2                               determining whether a beginning portion of the resource is resident in working memory,  
3                               the method further comprising calculating a cost for the access plan based upon the  
4                               determined retrieval status, including weighting the cost based upon the beginning  
5                               portion of the resource being resident in working memory.

1           16. An apparatus, comprising:

2                     at least one processor;

3                     a memory that includes a working memory; and

4                     program code resident in the memory and configured to be executed by the  
5           at least one processor to optimize a database query by determining a retrieval  
6           status for a resource used by the database query, and generating an access plan for  
7           the database query using the determined retrieval status for the resource.

1           17. The apparatus of claim 16, wherein the resource is selected from the group  
2           consisting of a database file, a database table, an index, a temporary result set, a  
3           temporary file, a hash table, and combinations thereof.

1           18. The apparatus of claim 16, wherein the program code is configured to  
2           determine the retrieval status by determining whether at least a portion of the resource is  
3           resident in the working memory.

1           19. The apparatus of claim 16, wherein the memory further includes a cache  
2           memory, and wherein the program code is configured to determine the retrieval status by  
3           determining whether at least a portion of the resource is resident in the cache memory.

1           20. The apparatus of claim 16, wherein the working memory includes a local  
2           memory, wherein the memory further includes a remote memory, and wherein the  
3           program code is configured to determine the retrieval status by determining whether at  
4           least a portion of the resource is resident in the local or the remote memory.

1           21. The apparatus of claim 16, wherein the program code is configured to  
2           determine the retrieval status by determining a percentage of the resource that is resident  
3           in the working memory.

1           22. The apparatus of claim 16, further comprising a resource manager, wherein  
2 the program code is configured to determine the retrieval status by accessing the resource  
3 manager to obtain the retrieval status of the resource.

1           23. The apparatus of claim 22, wherein the resource manager is configured to  
2 track a percentage of the resource that is in the working memory.

1           24. The apparatus of claim 23, wherein the resource manager is further  
2 configured to store the percentage of the resource that is in working memory in a header  
3 for a persistent copy of the resource.

1           25. The apparatus of claim 16, wherein the program code is configured to  
2 generate the access plan by generating a plurality of alternate access plans, calculating a  
3 cost for each alternate access plan using the determined retrieval status for the resource,  
4 and selecting one of the alternate access plans based upon the calculated costs for each  
5 alternate access plan.

1           26. The apparatus of claim 25, wherein the retrieval status for the resource  
2 indicates a percentage of the resource that is resident in the working memory, and  
3 wherein the program code is configured to calculate the cost for each alternate access plan  
4 by calculating the cost as a function of input/output cost and processing cost, and  
5 calculating the input/output cost by scaling an estimated input/output cost by a scalar  
6 value associated with the percentage of the resource that is resident in the working  
7 memory.

1           27. The apparatus of claim 25, wherein the program code is further configured to  
2 store the access plan and associate with the stored access plan a retrieval status  
3 assumption for the stored access plan, wherein the retrieval status assumption represents  
4 the determined retrieval status used to generate the access plan, and wherein the program

5 code is further configured to, in response to a request to execute the stored access plan,  
6 determine a current retrieval status for the resource, compare the current retrieval status  
7 with the retrieval status assumption, and selectively generate another access plan for the  
8 database query using the current retrieval status based upon the comparison of the current  
9 retrieval status with the retrieval status assumption.

1 28. The apparatus of claim 16, wherein the program code is configured to  
2 determine the retrieval status by determining whether a beginning portion of the resource  
3 is resident in the working memory, and wherein the program code is further configured to  
4 calculate a cost for the access plan based upon the determined retrieval status, and weight  
5 the cost based upon the beginning portion of the resource being resident in the working  
6 memory.

1           29. A program product, comprising:

2                   program code configured to optimize a database query by determining a  
3           retrieval status for a resource used by the database query, and generating an access  
4           plan for the database query using the determined retrieval status for the resource;  
5           and

6                   a computer readable signal bearing medium bearing the program code.

1           30. The program product of claim 29, wherein the computer readable signal  
2           bearing medium includes at least one of a transmission medium and a recordable  
3           medium.